Master Program in Navigation and Related Applications in Torino

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Outline

1 – Why a Master on Global Navigation Satellite Systems (GNSS) ?

2 – Overview of the Master Program

3 – Details on the UN/Italy Fellowship Programme

4 – Conclusions
Why a Master on GNSS?

- GALILEO will be the European Global Navigation Satellite System expected to be in operation in 2012
- Boost for research in the field in GNSS in Europe
- Skilled personnel required for the development and management of innovative navigation-related applications

need for educational programs on GNSS in Europe
A joint initiative on education

The Master is a joint initiative of

Politecnico di Torino

Istituto Superiore Mario Boella

with the cooperation of

INRIM Galileo Ferraris and UN OOSA

United Nations Office for Outer Space Affairs
Politecnico di Torino

• The oldest Technical University in Italy (founded in 1859)
• About 24,600 students:
  – 17,900 Engineering
• Staff:
  – 863 professors & researchers
• 4 faculties in engineering with 24 curricula and degrees.
• 2 faculties in architecture with 7 curricula and degrees.
  • 18 Departments
  • 35 Doctoral school curricula
Istituto Superiore Mario Boella (ISMB)

- Non-profit research institute
- **Mission:** Empowerment of ICT research, high level training/education and business intelligence
- 8 Labs in partnership with Politecnico
- **Goals:**
  - Promote a strong integration between ICT operators on highly innovative programs and projects
  - Achieve synergy between university and socioeconomic system
Structure of Education in Italy

The Italian University system after 1999

Pre-University Education (13 years)

Laurea Bachelor of Science (BS) (3 years)

Laurea Specialistica Master of Science (2 years)

Master I livello Specialising Master I level (1 year)

Master II livello Specialising Master II level (1 year)

Dottorato PhD (3 years)
Overview of the Master Program

Students with a 5-year university curriculum

Degree on:
- Information Technology
- Electronic Engineering
- Communications Engineering
- Aerospace Engineering
- Environmental Engineering

Requirements for Admission

Good knowledge of English language
Overview of the Master Program

The Masters lasts 1 year:

- 12 classes over 3 quarters (50 ECTS)
- The fourth quarter is devoted to an internship to be carried out in a company (30 ECTS)

- Communication systems and DSP
- Digital image processing
- Basics on geomatics and orbits
- GNSS introduction
- Timing in navigation systems
- Timescales in GPS and Galileo
- Software radio receivers
- GPS and Galileo Receivers
- Synchronization (PLL, carrier phase, etc.)
- Integration between satellite and cellular localization systems
- Environmental applications
- Algorithm and instruments for timescale generation
- Synchronisation and automatic measurements

11 ECTS
14 ECTS
12 ECTS
16 ECTS
16 ECTS
Details on UN/Italy Fellowship

“Istituto Superiore Mario Boella (ISMB) and Politecnico di Torino of Italy have established a Long Term Fellowship Programme which will provide scientists and specialists from developing countries with an opportunity to receive a Master Degree in Navigation and Related Applications.“

United Nations Vienna, June 2004

The fellowship is therefore the possibility for students selected by United Nations to attend the Master
Details on UN/Italy Fellowship

The agreement among Politecnico di Torino, ISMB and UN-OOSA covers the following aspects:

1. Contribution to the Master Curriculum definition
2. Master Organization
3. Financial Support
4. Master Promotion
5. Student Selection

The program of the courses has been prepared by the Masters Scientific Committee and discussed with the OOSA representatives.

The Masters programme has been organised with the co-operation of officers of UN-OOSA.

The 5 students selected by UN receive a scholarship by ISMB to attend the Master.

The Masters and the Fellowship initiatives have been promoted through the UN web site and in all the UN Educational Centres in the world.

5 students are selected yearly by UN through the UN Regional Educational Centres.
The academia-industry interaction

But also industries and international bodies contribute to the Master with scholarships, lessons, and seminars:
The academia-industry interaction

Teachers’ affiliation

- Politecnico di Torino: 36%
- ISMB: 23%
- INRIM: 14%
- Industries: 27%
The first three editions

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UN/ISMB Project

ALPIP Project

ASIAN Project

JEAGAL Project

National funds

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UN/ISMB Project

ALPIP Project

ASIAN Project

JEAGAL Project

National funds
Final comments

- Students actively participate to the course activities
- Seminars offered by industries and international bodies were enthusiastically welcome by the students
- Students obtained good results in their examinations
- Students coming from so different countries and cultures succeeded in interact and integrate their experience with very positive results in intellectual and cultural exchanges
- About all the graduated students are now working in the field
Information on:

http://didattica.polito.it/master/navigation

http://www.oosa.univienna.org

Email to:

Master.universitari@polito.it
Thank you!